

Childhood Obesity and Its Exploration in Ayurveda: A Review

Dr. Suman Bishnoi¹, Dr. Harish Kumar Singhal², Dr. Dinesh Rai³

¹PG Scholar, ²Associate Professor & H.O.D., ³Associate Professor;

P. G. Department of Kaumarbhritya, Postgraduate Institute of Ayurveda, Dr. S. R. Rajasthan Ayurved University, Jodhpur, Rajasthan

Corresponding Author: Dr. Suman Bishnoi

DOI: <https://doi.org/10.52403/ijhsr.20240558>

ABSTRACT

In the present time, childhood obesity is one of the most serious public health challenges. The problem is worldwide, especially in urban areas. Modified dietary habits, diet quality and quantity, increased physical inactivity, junk food preservation, an increasingly sedentary lifestyle, and other factors are among the causes of childhood obesity in India. *Ayurveda* explains nutritional difficulties haphazardly. Incorrect *Ahara* and *Vihara* cause every sickness. A well-balanced diet combined with appropriate dietetic guidelines can help prevent many common health issues. *Sthaulya*, as described in *Ayurvedic* literature, is very similar to obesity. *Sthaulya Roga* is categorised as *Medoroga* in *Ayurveda*. It is classified as one of the eight disgusting circumstances as mentioned by *Acharya Charaka*. *Atisthula* is defined as a person who has an excessive accumulation of *Meda* and *Mamsa* that causes flabbiness in the hips, abdomen, and breasts. *Ayurveda* and *Yoga* offer promising solutions for managing and preventing obesity. The present review explores the aetiology, pathophysiology, and therapy of obesity using *Ayurvedic* and *Yoga* approaches.

KEYWORDS: *Ayurveda*, *Medo Roga*, Obesity, *Sthaulya*, *Yoga*.

INTRODUCTION

The World Health Organization defines good health as a state of complete physical mental and social well-being and not merely an absence of disease or infirmity.^[1] This resembles the definition of *Swasthya* mentioned in classical texts of *Ayurveda* which is- “*Sama Dosha Sama Agnischa Sama Dhatu Mala Kriya Prasanna Atma Indriya Manaha Swastha Itiabhidheeyate*” that means one is in perfect health when the three *Doshas* (*Vata*, *Pitta* and *Kapha*), the digestive fire (digestion, assimilation and metabolism), all the body tissues, components (*Dhatus*) all the excretory functions (the physiological functions of urination and defecation) are in perfect order

with a pleasantly disposed and contented mind, senses and spirit.^[2] Health is a relationship between mind, soul and body, but nowadays the synchronization between mind and body is disturbed which results in lots of physical, mental and psychological issues. Obesity is one of the burning health issues of today's time, even children are no exception. *Sthaulya* is ‘*Santarpan Janya Vikara*’ an over nutritional disorder.^[3] In *Ayurveda* *Sthaulya* is regarded as *Medoroga*, a disorder of *Meda Dhatu*, adipose tissue and fat metabolism. *Atisthaulya* has been described in various *Samhitas*, as *Acharya Charka* has described *Sthaulya* among the *Asta Ninditha Purusha*,^[4] *Santarapanajanya Vikara*, *Sleshma Nanatmaja*,^[5] and

Sansodhana Yogya [6]. A person in whom there is excessive accumulation of *Meda* (Fat/Adipose tissue) and *Mansa* (Flesh/Muscle tissue) leading to looseness of hips, abdomen, and breast has been categorized as *Atisthula*. [7] *Meda Dhatu* is the body tissue dominating *Prithvi* and *Apa Mahabhutas* similar to *Kapha Dosha*. [8] In *Ashtanga Hridaya Acharya Vagbhata* described *Sthaulya* in *Dwividopakramaneya Adhyaya*. [9] In *Kashyap Samhita*, *Sthaulya* is considered one among the *Astanindita Purusha* while explaining anthropology. In *Madhav Nidana*, *Madhavakar* has elaborated on the pathophysiology of the *Sthaulya*. [10] *Sthaulya* is abnormal and has an excess accumulation of *Medodhatu* and *Mamsadhatu*. *Sthaulya* can also occur due to *Beejdosha*. In the pathogenesis of *Sthaulya*, all three *Doshas* are vitiated especially *Kledaka Kapha*, *Pachaka Pitta*, *Samaana* and *Vyana Vayu* are responsible for the *Samprapti* (aetio pathogenesis) of *Sthaulya*. [11]

Classification- There is no such clear classification in our classics, however, several *Acharyas* have managed to eliminate some light on the classification of *Sthaulya*. *Acharya Charaka* [12] describes *Sthaulya* as *Sthula*, *Atisthula*. *Acharya Sushruta* [13] describes *Sthaulya* into two parts i.e. *Sthaulya*, and *Medoroga*. *Acharya Vagbhata* [14] divides *Sthaulya* into three parts i.e. *Adhik*, *Madhya* and *Hina*. *Sharangadhara* [15] describes *Sthaulya* as a *Medodosha*.

Modern View

The term "obesity" refers to the abnormal growth of adipose tissue caused by either hypertrophic obesity (enlargement of fat cells) hyperplastic obesity (increase of fat cells number), or both. [16] Accumulation of the excess/abnormal fat in adipose tissue level, which impairs the normal health pattern called obesity. The imbalance between energy intake and energy expenditure results in overweight/obesity. Even though having high energy storage, overweight/obese children do not have less

energy needs but have high energy demands to neutralize the high energy requirements of the high body weight. [18] The definitions given by WHO and the International Obesity Task Force using body mass index. Body mass index (BMI) is a good marker to identify the overweight/Obesity or increased adiposity; which directly measures the body fat. (BMI = (weight in kg)/ (height in m³)) are most commonly used to quantify obesity. In adults, obesity is defined as a BMI greater than 25 kg/m², morbid obesity as a BMI greater than 40, and super obesity as a BMI greater than 60. In children, normal BMI changes with age, so the BMI for age should be looked at, using the Centre for Disease Control charts which provide percentiles or by calculating the z-score for BMI, using the standard norms given on the WHO website. The child is "overweight" if the BMI is 85-95 percentiles for age and gender, and "obese" if BMI is greater than 95 percentiles. Weight for height can be calculated ("overweight": up to 120% of ideal, "obese": > 120%) and is often used for children under 5 years, but it can also be useful in older children to help the family understand the severity of the problem. [19] Children with > 2 years of age having a BMI >95th percentile fulfil the obesity criteria, and those having a BMI between 85th and 95th percentile come under the range of overweight. Khadilkar et al revised the BMI, Overweight & Obesity criteria of overweight/children and concluded the 23 adult equivalent overweight range BMI and 27 adult equivalent BMI for labelling the overweight/obese children respectively. [20]

MATERIALS AND METHODS

Classical texts of Ayurveda like *Charaka Samhita*, *Sushrut Samhita* *Kashyap Samhita*, and *Ashtanga Hridaya*. *Ashtanga Sangraha*, textbooks of *Kaumarbhritya* etc and modern textbooks including digital media, Ayush Research Portal, PubMed, Google Scholar and other websites on the internet regarding the subject utilized as source material in the study.

AIM AND OBJECTIVES

- To identify the components associated with *Sthaulya* using *Ayurvedic* principles.
- To review the literature for *Ayurvedic* management of *Sthaulya*.
- To explore *Ayurvedic* treatment possibilities for *Sthaulya*.

Factors leading to Childhood Obesity- [21][22]

Obesity is a complex disease with multiple causes that can lead to a variety of health issues.

Over the years, research on obesity has yielded valuable insights into genetics, physiology, biochemistry, and socio-epidemiology. The aetiology of *Sthaulya* involves not just dietary intake and lifestyle choices, but also psychological issues. These causes include both genetic and behavioural factors. Dietetic factors: being overweight is due to an imbalance between high energy intake and low output. Faulty dietary habits, patterns, fast food/junk food, frequent intake, fruit juices, cold drinks/high energy drinks, etc leads to energy accumulation and adiposity. In modern times children consume energy-dense fast foods and soft drinks with artificial sweeteners. Most packed foods have low fibre, high simple carbohydrates (fructose, sucrose), high fat and low micronutrient content. High incidence of consumption of such food noted in childhood age. Physical activities and habits: sedentary lifestyle, physical inactivity, fewer playgrounds in school/society, sweetened beverages and prolonged TV viewing (reduces activity, increases calorie intake, pushes wrong message about food, encourages intake of junk food), computer gaming, fewer sports activities, low organised physical activity in children lead to overweight. Increased screen time leads to decreased physical fitness and self-esteem and lower school performance. Psychological factors: e.g. eating for emotional reasons, low self-esteem, the tendency of fast/junk food intake, the mass effect of high energy drinks, and the typical Indian mentality of a chubby child means a

healthy child. Genetic & pathologic factors: obesity runs in families, as they share both genes and environment; parental obesity is a strong risk factor. Weight gain during the prenatal period, maternal weight, and diabetes are the important predictors. Some genetic factors (several mental retardations, Muscular dystrophy, Cushing syndrome, Prader-willi syndrome, Laurence-Moon-bill syndrome, Alstrom, Cohen, POMC deficiency, growth hormone deficiency, hypothyroidism, etc play an important role in gaining weight. Others: drugs (sedatives like sodium valproate, Corticosteroids), changed lifestyles (sedentary), continuous bombarding of high-calorie food advertisements on multimedia, internet, T.V. etc, Industrialization, lack of grounds/play area due to urbanization/industrialization, changed the approach towards the quality of life, miss concepts about the healthy child in a typical scenario with chubby child (i.e. the big child is a healthy child), lesser access to quality medical care, etc play an important role in gaining the weight in children.

Hetu/Nidana (Causative Factors) [23][24][25] *Ayurveda* describes the causal factor (*Hetu/Nidana*). *Charaka Samhita* explains that *Sthaulya* is caused by inherited factors (*Beeja-Dosha*), as well as diet, regime, and psychology. These usually involve something of an exogenous nature. *Sthaulya* may be caused by factors other than *Meda* and *Sleshma*. *Acharya Sushruta* and *Vagbhata* discuss endogenous reasons. According to *Vagbhata*, *Dhatwagni-Mandya* is the primary cause of *Sthaulya*, with other factors in its aetiology. The substance can enhance the properties of *Medo-Dhatu*, which are similar to *Meda* and lead to higher levels of undesirable fat in the body. A substance will increase those *Bhavas* (qualities) of *Medo-Dhatu* which inherits; and possesses the qualities same as *Meda* which increases the bad quality of fat (*Meda*) in the body. There are three types-

- **Dravya Samnya (Ahara):** The substance's properties are similar to those of a certain body part (*Dhatu*), resulting

in a rise in both the quality and quantity of that particular body part. Fatty materials, such as *Vasa* (animal fat), *Meda* (fatty substances), and *Mansa* (meat), continue to increase fat.

- **Guna Samnya:** *Guru* (heavy for digestion), *Snigdha* (oily, unctus), *Sheeta*, and other compounds with similar properties to *Meda* which increase *Meda*.

- **Karma Samnya (Vihara):** *Sukhasana* (sedentary lifestyle), *Avyayam* (poor physical activity), *Divaswapna* (day sleep), and other habits lead to the accumulation of fat and vitiation. The causes of *Medoroga*, as explained by various *Acharyas*, can be divided into four categories: [23][24][25].

Table No. 1. Showing the etiological factors of Medoroga:

A. Aharatmaka Nidana (Dietary factors)	
1	<i>Atibhojana</i> (overeating), <i>Guru Aharasevana</i> (excessive consumption of heavy food)
2	<i>Madhura</i> (sweet), <i>Sheeta</i> (cold), <i>Snigdha</i> (oily) <i>Aharasevana</i> (food consumption)
3	<i>Navanna</i> (usage of fresh grains), <i>Nava Madya</i> (usage of fresh alcoholic preparation) and <i>Gramya Rasa Sevana</i> (usage of domestic animal meat and soups)
4	<i>Paya Vikara</i> , <i>Dadhi</i> , <i>Sarpi Sevana</i> (excessive usage of milk and its products, ghee and curd)
5	<i>Sleshmala Ahara</i> like <i>Ikshu</i> , <i>Guda Vikara Sevana</i> (<i>Kapha</i> increasing food, usage of sugarcane and Jaggery's preparation)
6	<i>Mamsa Sevana</i> (usage of meat), <i>Audak Rasa Sevana</i> (usage of aquatic animal meat and soups)
7	<i>Shali Sevana</i> , <i>Masha and Godhuma Sevana</i> (use of rice, Phaseolus munga and wheat)
B. Viharatmaka (Daily activities/Lifestyle)	
1	<i>SvapnaPrasangat</i> , <i>Gandhamalyanu Sevana</i> (sedentary life)
2	<i>Sukha Shaiyya</i> (luxurious bed)
3	<i>Avyayam</i> (physical inactivity)
4	<i>Snana Sevana</i> (bath)
5	<i>Divaswapa</i> (daytime sleep)
C. Manas Vyaparatmaka (Psychological factors)	
1	<i>Saukhyena</i> (relax life)
2	<i>Harsha Nitya</i> (being happy)
3	<i>Priyadarshana</i> , <i>Mansonivruti</i> (lack of mental work)
4	<i>Achinta</i> (lack of worry)
D. Other Factors	
1	<i>Tail Abhyanga</i> (oil application over the body)
2	<i>Beeja Doshasvabhavat</i> (genetic causes, familial causes)
3	<i>Snigdha udvartana</i> , <i>Snigdha Madhura Basti sevana</i> (application of oily paste over body and enema of oils)

Overweight (*Sthaulya*) and malnutrition (*Karshya*) are determined by the quality and quantity of the nutritive pool created after digestion (*Ahara Rasa*). According to *Samanya Vishesh Siddhanta*, excessive consumption of the same substances (*Dravya Samanya*), quality (*Guna Samanya*), or activity (*Karma Samanya*) leads to an increase in *Dhatu* development.^[26] As explained above, increased intake of *Aharatmaka Nidana* leads to the overproduction of *Medo Dhatu*. According to *Ayurvedic texts*, excessive consumption of energy-dense foods such as *Guru*, *Snigdha*, *Madhura*, and excrement *Ahar* promotes *Meda*. *Aharatmaka Nidana* reduces physical activity, aggravates *Kapha*, and causes *Meda* deposition. *Viharatmaka Nidana*, like *Divaswapna*, has *Abhishyandi* properties that can block the body's small passageways (*Srotas*), particularly the

Medovaha Srotas.^[27] Furthermore, a significant contributing component to the genesis of excess fat is the lowered metabolic rate that occurs during sleep. *Acharyas* discussed psychogenic causes of *Sthaulya* in *Ayurvedic scriptures*, as it falls within the category of psychosomatic disorders. Modern lifestyles can lead to decreased physical activity and more mental work. Psychogenic disorders are becoming increasingly prevalent nowadays. *Harshanitya* and *Achintana* are two psychological factors mentioned by *Acharya Charaka*, which are responsible for *Meda Vriddhi*. These factors are *Kapha* aggravating factors that lead to *Meda* deposition.^[28]

Features of Childhood Obesity: ^[29]

In *Charaka Samhita*, *Acharya Charaka* described *Atisthaulya* symptoms in *Ashtoninditiya Adhyay* as shown below.

Table No. 2 Showing Atisthaulya Symptoms

1	<i>Ayuhrasa</i>	Diminution of life span
2	<i>Javoparodha</i>	Lack of enthusiasm
3	<i>Krechravyavaya</i>	Difficulties of the sexual act
4	<i>Dourbalya</i>	Weakness
5	<i>Dourgandhya</i>	Foul smell
6	<i>Swedavabadha</i>	Excessive sweating
7	<i>Kshudita atimatra</i>	Excessive hunger
8	<i>Pipasa atiyoga</i>	Excessive thirst
9	<i>Ksudra swasa</i>	Dyspnea
10	<i>Ayatopacaya</i>	Abdominal girth of the body

Complications [30]

Most cases of childhood obesity are just overweight, with few problems other than psychological distress and poor body image. However, severe obesity can be associated with such significant morbidity. Behavioural stress like social or psychological, skeletal problems such as Genu Valgum with slipping femoral Epiphysis, Respiratory Problems Obstructive Sleep Apnea condition. Cardiovascular

disease like Hypertension. Metabolic Hyperlipidaemia and diabetes. Obesity is associated with many complications in ongoing life. [31].

Pathophysiology (Samprapti) of Sthaulya: [32]

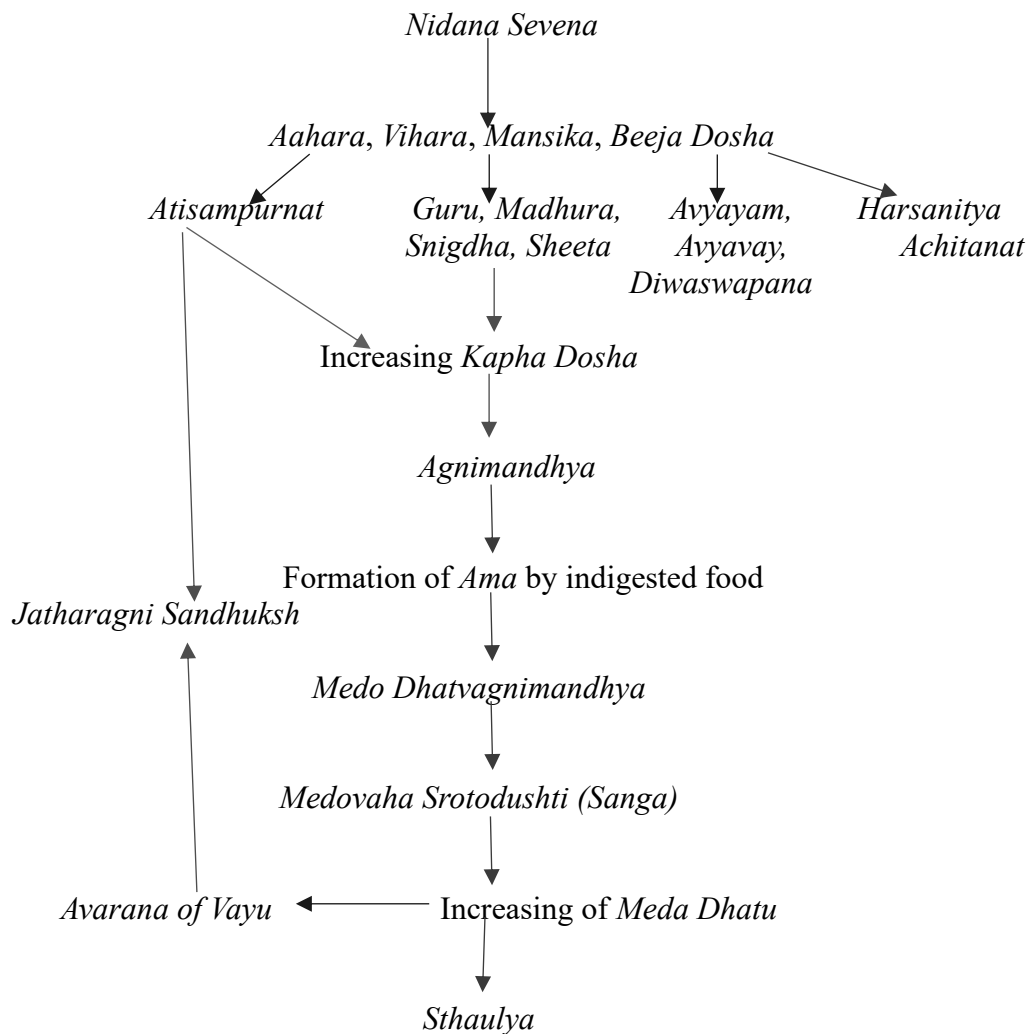
The etiological factors defined by *Acharyas* can be divided into four categories:

Dosha Dushtikara- *Guru, Madhura, and Sheeta Guna* dominant diet.

Khavaigunyakara - *Avyayama, Avyavaya, Achintana, Nityaharsh* etc.

Agnimandyakara - *Ati Bhojana, Madhura, Snigdha Pradhana Bhojana.*

Beejadosha - It degrades *Medo Dhatvagni Poshakansha*, as a result, *Ama Sanchaya* occurs in *Medodhatu*, which leads to *Sthaulya*.



Samprapti Ghataka^[33]

- **Dosha:** Kledaka Kapha
- **Pitta** – Pachaka Pitta
- **Vata** - Samana, Vyana Vata
- **Dushya:** Rasa, Mansa, Meda
- **Agni:** Jatharagni, Dhatvagni (Medodhatvagni)
- **Srotasa:** Rasvaha, Medovaha Srotasa
- **Srotodushhti:** Sanga
- **Adhithana:** Vapavahan, Medodharakala
- **Udbhavasthana:** Amashaya
- **Prasara:** Rasayani
- **Rogamarga:** Bahya
- **Ama:** Jarharagnimandhyajanita, Medodhatvagnimandhyajanita
- **Vyaktisthana:** Sarvanga, especially Sphika, Udara, Stana

Management of childhood obesity- Chikitsa of Sthaulya

According to *Acharya Charaka*, such actions, which bring the equilibrium of *Dhatu*, constitute the treatment of diseases. *Acharya Charaka* has further amplified the scope of the term *Chikitsa*.^[34] The aim of *Chikitsa* is not only at the radical removal of the causative factors of the disease but also at the restoration of the *Doshika* equilibrium"^[35]. *Sthaulya* management in *Ayurveda* is divided into three steps: *Nidana Parivarjana*, *Shodhana*, and *Shamana*.

Nidana Parivarjana

The main line of treatment for any disease is *Nidan parivarjan*.^[36] *Nidana Parivarjana Chikitsa* means avoiding all the *Aharatmaka*, *Viharatmaka*, *Mansika*, and other factors responsible for the manifestations of a disease. To prevent *Brimhana*, avoid factors such as sedentary lifestyles, including *Snigdha Ahara* and *Madhura Rasa*, which are linked to many *Kapha* and *Meda* disorders.^[37] This includes following the *Ahara-Vihara-Manasa Pathya*.

Ahara Pathya- Avoid eating food after lunch or dinner, avoid binge eating or eating hurriedly, avoid excess eating, avoid excess sweet intake, and avoid eating heavy meals.

Before meals drinking lukewarm water is beneficial for obese people according to *Acharya Sushrut*.

Vihara Pathya- Do physical exercise- engage the child in playing ground games, doing *Yogasana*, etc. Avoid daytime sleeping, Go to bed early. Minimize the use of vehicles Encourage walking, and climbing the staircase instead of using the lift.

Manasa Pathya- Minimize the use of gadgets, and smartphones Minimize TV watching time Go to bed early and early morning to Develop a positive behavioural approach.

Sanshodhana Chikitsa

Sanshodhana Chikitsa targets the root causes of *Sthaulya* and can effectively treat the disease. It reduces the risk of disease recurrence and promotes normal strength and complexion. ^[38] It can be categorized into two categories: *Bahya Shodhana*- It includes *Udvartana*, *Avagha*, and *Parisheka*. In *Sthaulya*, *Ruksha Udvartana* is referred to as *Bahya Shodhana*.^[39] *Ruksha Udvartana* has *Kaphahara*, *Medasapravilayana*, *Sthirikaranam*, and *Twakprasatkara* properties.^[40] *Abhyantra Shodhana*-It includes *Vamana*, *Virechana*, *Nasya*, *Niruhabasti* and *Raktamokshana*.

Sanshamana Chikitsa

Shamana therapy eliminates the disease by inhibiting the vitiated *Dosha* while maintaining the other *Dhatus*. This kind of treatment is highly effective in the initial phases of the disease. Administration of *Guru* and *Apatarpaka* products with additional *Vataghna*, *Shleshmahara* and *Medohara* characteristics is considered ideal for *Samshamana* therapy.^[41] *Ayurvedic* herbs can boost metabolism, reduce fat, improve cholesterol levels, and assist manage weight. It is a safe and natural method of medicine. *Ayurvedic* herbs such as *Guggulu*, *Musta*, *Triphala*, *Arjuna*, and *Zingiber officinalis* are effective for treating *Sthaulya*.

Drugs used in the treatment of Sthaulya

Charaka has presented a single Mahakashaya of 10 medicines (Lekhaniya Mahakashaya)^[42], which is included in Medhohara drugs. At the same time, Sushruta^[43] said 8 and 10 Ganas, respectively, Varunadi Gana, Shalasaradi Gana, Lodhradi Gana, Arkadi Gana, Mushkakadi Gana, Nyagrodhdi Gana, Tryushana Gana, Usgakadi Gana. Guduchi, Bhadramusta, Triphala, Takrarista, Makshika, Vidangadi Lauha, the administration of Bilva Panchmula^[44] with honey, and Shilajatu with Agnimantha Swarasa are recommended for an extended period. Medo Nashaka and Lekhana are drugs and preparations such as Gavedhuka's Karshana Yavagu^[45], Lekhaniya Mahakashaya^[46], Bibhitaka^[47], Venuyava^[48], and Madhudaka^[49]. Akasha and Vayavya Mahabhuta dominant Dravyas are said to have Laghavakara action^[50] Hence Akasha and Vayavya Mahabhuta dominant articles can be utilised to manage Sthaulya. Katu and Kashaya Rasa have Karshana and Upchayahara characteristics, but Tikta Rasa has Lekhana and Medo Upshoshana Karma; hence, Katu, Tikta, and Kashaya Rasa dominating medications can be utilised to treat Sthaulya. Sushruta Samhita recommends administering Virukshana and Chhedaniya Dravya, particularly Shilajatu, Guggulu, Gomutra, Triphala, Loha Raja, Rasanjana, and Madhu in the appropriate dose and period. Dalhana explains that the Virukshana property reduces Meda, and the Chhedaniya property removes obstructions from body channels, especially from Medovaha Srotas, through its Sroto Vishodhana properties. Amalaki is described as Medopaham^[51], and Haritaki is recommended for the treatment of Santarpanajanya Roga^[52]. Haritaki and Amalaki can be used to treat Sthaulya. In this Chikitsa, different Aushadhis are used to treat Sthaulya, some of which are—

- **Rasa** – Trimurti Rasa, Vadvagni Rasa, Parad Bhasma.
- **Vati** – Arogyavardhini Vati, Bhedni Vati, Kutaki Vati.

- **Churna** – Triphala Churna, Vacha Churna, Trikatu Churna, Guduchyadi Churna Etc.
- **Kwatha** – Mustadi Kwatha, Agnimantha Kwatha, Brihat Panchmoola Kwatha, Mahamanjisthadi Kwatha Etc.
- **Saktu**- Vyoshadi Saktu, Chavyadi Saktu
- **Asava** – Arishta – Loharishta, Vidangasava, Lohasava.
- **Taila Yoga** – Mahasugandhadi Taila, Triphaladya Taila.
- **Loha Yoga** – Viangaadya Loha, Triushnaadya Loha.
- **Guggulu Yoga** – Navaka Guggulu, Medohar Guggulu, Amritadya Guggulu, Trayodashang Guggulu,^[53] Dasanga Guggulu^[54]
- **Rasayana** – Shilajatu Rasayana, Guggulu Rasayana, Amlaki Rasayana Etc.

Yoga asana^[55]

This disease is regarded as a gift of modern lifestyles and is a source of development for a variety of disorders. Yoga positions such as Asanas, Pranayama, meditation, and relaxation techniques can help you lose weight, reduce body fat, and control your weight. Yoga is a great way to lose weight and excess fat and to get the ideal body.

Sarvangasana (Shoulder stand pose) Enhances the function of the thyroid gland, which is responsible for regulating body weight, and normalises the endocrine system, which also controls the condition.

Padahastasana (Forward bending asana) enhances the body's metabolic process by influencing the pituitary and thyroid glands, which regulate it. It also helps to reduce tummy fat.

Ardha-Matsyendrasana (Half spinal twist pose) Treat conditions such as diabetes, indigestion, obesity, and constipation.

Bhujangasana (Cobra pose) Massages the abdominal organs, enhances back flexibility and regulates thyroid function. Good for children who are overweight.

Pavan Muktasana (Wind-releasing pose) Reduces fat in the abdomen.

Dhanurasana-Helps to burn extra fat in the body.

Pashchimottanasana- helps to remove the extra abdominal fat. Such patients benefit significantly from the regular practice of *Kati Chakrasana*, *Halasana*, *Matsyasana*, and *Ushtrasana*, as well as *Surya Namaskara*.

Suryanamaskar is now included in current yogic practices, however, it was not previously regarded as an asana or a part of traditional yoga. *Surya Namaskar* is a comprehensive practice in and of itself, as it combines *asana*, *pranayama*, and *mantra*. *Surya Namaskar* is an essential component of the yogic method, which may be simply incorporated into our daily lives and yield rapid and positive benefits. We conclude that *Surya Namaskar* should be practised by everyone daily to reap these benefits.

DISCUSSION

Obesity is referred to as *Medoroga* in *Ayurveda*, and it involves dhatu imbalances as well as *Agni* and *Srota* disturbances. According to modern science, disordered lifestyle and nutrition habits result in excessive fat accumulation in the body. Childhood obesity is one of the disorders of non-communicable disease. Obesity is now recognized as not cosmetic but a disease that causes impaired mobility and interference with daily living activities, serious morbidity, and even mortality. *Sthaulya*, a *Rasa Nimittaja Vyadhi* and *Sleshmaja Nanatamaja Vyadhi* have also been classified as a *Santarpanotha* condition, which is a sickness caused by inappropriate and excessive feeding. *Ayurveda* describes *Sthaulya*, including its *Nidaan*, *Lakshanas*, *Updravas*, aetiology, and management. In *Ayurvedic* texts, there are three primary types of *chikitsa*: *Nidan parivarjan*, *Sanshodhan Chikitsa*, and *Sanshamana Chikitsa*. *Ayurveda* has a key role in obesity prevention and treatment. Allopathic drugs might cause early weight loss. However, this medicine also has significant negative effects. Prolonged usage of these drugs can lead to high blood pressure problems in the future. It is also vital to remember that these

medications are only effective when administered. When they are removed, weight gain may occur. Among the many other things that different Acharyas mentioned in the *Dincharya Palan* are including yoga in their daily routine and avoiding *Diwaswapa* in the afternoon after eating. *Pathya Palan* in *Sthaulya*, as mentioned in many *Samhitas*, can help reduce obesity in both children and adults. Obesity is difficult to manage and has serious consequences in maturity, this holistic approach to the progression of disease, along with an individual approach to causative factors and *Ayurvedic* care, is extremely beneficial in controlling childhood obesity/overweight. To carry out the management plan for controlling childhood obesity, it is critical to have detailed knowledge of the food and lifestyle causative factors, as well as the illness process. It determines the timing, intensity, and type of therapies required to control obesity.

CONCLUSION

Modern civilisation has led to obesity among children, particularly those in pre-school and school age, as a result of unhealthy lifestyle choices, poor eating habits, and incorrect living standards. Our goal is to first modify the unhealthy lifestyle and eating habits of fat individuals. Following various *Pathyas*, including *Aharaja*, *Viharaja*, and *Manasika Pathyas*, along with herbal medications and *yoga* poses such as *Asanas*, *Pranayama*, meditation, and relaxation techniques, can aid in weight loss, body fat reduction, and weight management. Integral care, as opposed to crash dieting, is predicted to result in progressive, long-term, and sustainable weight loss. The ultimate goal of obesity treatment in children is to achieve and maintain a healthy weight.

Declaration by Authors

Ethical Approval: Not Required

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCE

1. World Health Organization constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June 1946 by the representatives of 61 states (official records of the World Health Organization, no.2, p.100) International Health Conference (2002). Constitution of the World Health Organization. 1946. *Bulletin of the World Health Organization*, 80(12), p.983-984.
2. Shastri A. (2018), Sushruta Samhita, Ayurvedatva Sandipika Hindi Commentary, Published by Chaukhambha Sanskrit Sansthan, Varanasi, Sutrasthan 15/48 pg.84
3. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary Chaukhambha Bharti Academy, Varanasi, SutraSthan Chapter 23 pg. 436
4. Shastri K, Chaturvedi G (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutrasthan 21/3 pg.407
5. Shastri K, Chaturvedi G (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutrasthan, 20/17 pg.405
6. Sharma RK (2011), Charak Samhita English commentary based on Cakrapani Datta's Ayurveda Dipika, Chaukhambha Sanskrit studies vol. XCIV in Sutrasthan chapter 21.
7. Sharma A.K. (2013), Kaya Chikitsa, part 3, Chaukhambha Publishers, Varanasi: edition; 171
8. Trikamji J (2005), Chakrapani Dutta in Commentator, Sushruta Samhita, Sutra Sthana, Doshadhatumalakshayavruddhi Vijnaniya Adhyaya, 15/4. 8th edition Chaukhambha Orientalia, Varanasi, 68
9. Gupta Atrideva, Ashtanga Samgraha with Hindi Commentary, Chowkhamba Krishnadas Academy, Reprint 2005, Vol. 1, Sutrasthan Chapter 24 pg. 182
10. Tripathi B. (2007) Madhavidanam, Vol 2, Chaukhambha Prakashan, Varanasi, Medorogvidanam, Chapter 34 pg 35
11. Samhita K, Tanta VJ, Sharma PH (2018) Vidyotini Hindi commentary, chapter 28, Chaukhambha Sanskrit Series, Varanasi, 80.
12. Trikamji Y (2011). editor of Charaka Samhita - Ayurveda Dipika Commentary of Chakrapanidatta, Chaukhambha Sanskrit Sansthan Varanasi, Edition Reprint. Charaka Samhita; Siddhi sthana; Panchkarmiya Siddhiadhyaya, 8: 678.
13. Trikamji Y. (2012), editor of Sushruta Samhita - Nibandhasangraha Commentary of Shri Dalhanacarya, Seventh Edition, Chikitsa Sthana; Vamana-Virechanasadhyopdrava Chikitsadhyaya, Chapter 33, Chaukhamba Orientalia Varanasi, 104-17: 517.
14. Sastri HS. Ashtanga Hridaya with the commentaries Sarvangasundara of Arundatta and Ayurveda Rasayana of Hemadri, edited by Paradakara Bhisagacarya; Reprint-2010, Chaukhamba Orientalia, Varanasi, Sutrasthan, Chapter 14, 12-14, 224.
15. Tripathi B. (2016) Deepika Hindi Commentary Sharangdhar Samhita, Chaukhamba Surabharti Prakashana, Varanasi, Purva Khanda 7/pg 69
16. Hager A. Adipose tissue cellularity in childhood with the development of obesity. *Br Med Bull.* 1981;37(3):287-290. doi: 10.1093/oxfordjournals.bmb.a071716
17. Lissauer T. Illustrated Textbook of Paediatrics, 3rd Edn reprint 2008, Published by Mosby Elsevier. ISBN 978-0-7234-3397-2/chapter12/pg201-203
18. Parthasarathy A, IAP Textbook of paediatrics 2013 IAP, National Publication House Gwalior, Jaypee Brothers Medical Publishers (P) LTD, page no-130
19. VV Khadilkar et al, BMI cut-offs for screening childhood overweight and obesity in Indian children, *Indian Ped/Vol.49/Jan2012*
20. Parthasarathy A, IAP Textbook of paediatrics 2013 IAP, National Publication House Gwalior, Jaypee Brothers Medical Publishers (P) LTD, page no-1005
21. Kumar S. Manual of Paediatric Practice, Paras Medical Publisher New Delhi, 4th Edn 2014; ISBN 978-81-8191-423-1. Chapter 15/pg. 698-702.
22. Parthasarathy A, IAP Textbook of paediatrics 2013 IAP, National Publication House Gwalior, Jaypee Brothers Medical Publishers (P) LTD, page no-1004
23. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutrasthan 21/3, 9 pg.407,411
24. Murthy K.R.S. (2001) Ashtanga Sangrah of Vagbhata, 4th Edition Chaukhambha Orientalia, Varanasi, Sutrasthan 24, 23.
25. Joshi YG. (2001), Kayachikitsa, 4th Edn; chapter 21, Published by Pune sahitya vitaran, 265-270

26. Shastri K. and Chaturvedi G. (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 1/44 pg.15
27. Shastri K. and Chaturvedi G. (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Vimansthan 5/16 pg.713
28. Shastri K. and Chaturvedi G. (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 21/3, 9 pg.407,411
29. Shastri K. and Chaturvedi G. (2009), Charaka Samhita, Vidyotini Hindi commentary, Chaukhambha Bharati Academy, Varanasi, Sutraasthan 21/4 pg.409
30. Connell LJ. Ulrich PV. Brannon EL. Alexander M. Presley AB. Body Shape Assessment Scale: Instrument development for analyzing female figures. Cloth Text Res J. 2006; 24:80–95. [Google Scholar]
31. Agrawal M. Textbook of Pediatrics, 2nd edition, CBS Publishers and Distributors, Reprint, 2017, 30.
32. Tripathi B. (2007) Madhavnidanam, Vol 2, Chaukhambha Prakashan, Varanasi Reprint 2018, Medorognidanam, chapter 34 pg.35
33. Singhal HK, et al. A Review Article on Managing Childhood Obesity in Ayurveda. Nat Ayurvedic Med 2021, 5(1): 000301.
34. Shastri K. and Chaturvedi G. (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 9/5 pg.192
35. Shastri K. and Chaturvedi G. (2009), Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Vimansthan 7 /30 pg.734
36. Shastri A. (2018), Sushruta Samhita commentary “Ayurveda Tattva Sandipika” part 2, Chaukhambha Sanskrit Academy, Varanasi, Uttar Tantra Chapter 1/25 pg.14
37. Sharma S. Sharma R. Devi Bhima. Bakhtyar A. An Obesity in Children - An alarming problem in Kaumarbharitya. J Ayurveda Integr Med Sci 2017; 4:258-262. <http://dx.doi.org/10.21760/jaims.v2i4.9362>
38. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 15/22 pg.317
39. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 21/21 pg.414
40. Gupta Atridev, Ashtanga Hriday “Vidyotini” Hindi commentary, Chaukhambha Orientalia, Varanasi, Sutraasthan 2/15 pg.26
41. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 21/20 pg.414
42. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 4/3(3) pg.72
43. Shastri A. (2018), Sushruta Samhita, Ayurvedtatva Sandipika Hindi Commentary, Published by Chaukhambha Sanskrit Academy, Varanasi, Sutraasthan 38 pg.182
44. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan, 21/24 pg.415
45. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 2/25 pg.56
46. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 4/3(3) pg.72
47. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 27/148 pg.543
48. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 27/20 pg.529
49. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 27/323 pg.563
50. Shastri K. and Chaturvedi G. (2009) Charak Samhita, Vidyotini Hindi commentary, Chaukhambha Bharti Academy, Varanasi, Sutraasthan 26/11 pg.490
51. Shastri A. (2018), Sushruta Samhita, Ayurvedtatva Sandipika Hindi Commentary, part 1, Published by Chaukhambha Sanskrit Sansthan, Varanasi, Sutraasthan 44/70 pg.214
52. Shastri A. (2018), Sushruta Samhita, Ayurvedtatva Sandipika Hindi Commentary, part 1, Published by Chaukhambha Sanskrit Sansthan, Varanasi, Sutraasthan 44/69 pg.214
53. Mishra BS Bhavprakash, Vidhyotini Hindi commentary by Chaukhambha Sanskrit Sansthana Varanasi 221001, Part –III, Shoulya Adhikar, Chapter 39(30).

54. Kumari U, Vyas PP, Singhal HK and Rai DK. Clinical Study on Dashanga Guggulu and Surya Namaskar in the Management of Sthaulya (Obesity) In Children. *Ortho & Rheum Open Access J.* 2023; 22(2): 556083. DOI: 10.19080/OROAJ.2023.22.556083
55. Prajapati V., Kori V.K. and Patel K.S. (2018). Preventive and Curative Aspects of Sthaulya in Children Through Ayurveda. 235. 10.20959/wjpr201812-12601.

How to cite this article: Suman Bishnoi, Harish Kumar Singhal, Dinesh Rai. Childhood obesity and its exploration in ayurveda: a review. *Int J Health Sci Res.* 2024; 14(5):442-452. DOI: <https://doi.org/10.52403/ijhsr.20240558>
